

Serial No. 09/590,646

IN THE DRAWINGS

Replacement Formal Drawings, revised as previously proposed, are enclosed.

REMARKS

The Office Action of July 13, 2006, has been received and reviewed.

Claims 1-69 are currently pending in the above-referenced application. Of these, claims 3, 9, 32, 38, 50, and 54 have been withdrawn from consideration. Claims 1, 2, 4-8, 10-31, 35-37, 39-53, and 55-69, which have been considered, stand rejected.

Reconsideration of the above-referenced application is respectfully requested.

Supplemental Information Disclosure Statements

Please note that Supplemental Information Disclosure Statements were filed in the above-referenced application on May 30, 2001 and on January 25, 2002, but that the undersigned attorney has not yet received any indication that the references cited in the Supplemental Information Disclosure Statements have been considered in the above-referenced application. It is respectfully requested that the references cited in the Supplemental Information Disclosure Statements of May 30, 2001 and January 25, 2002, be considered and made of record in the above-referenced application and that initialed copies of the PTO 1449 forms that accompanied that Supplemental Information Disclosure Statements be returned to the undersigned attorney as evidence of such consideration.

For the sake of convenience, second copies of the Supplemental Information Disclosure Statements, PTO-1449 forms, and USPTO date-stamped postcards are enclosed herewith.

Drawings

New sheets of formal drawings, which include the previously presented corrections, are enclosed. The replacement sheets do not introduce new matter into the above-referenced application. Accordingly, their approval and entry are respectfully requested.

Rejection under 35 U.S.C. § 112, Second Paragraph

Claim 65 has been rejected under 35 U.S.C. § 112, second paragraph, for reciting subject matter that is purportedly indefinite. Specifically, it has been asserted that the recitation “flip-chip die” is indefinite.

It is respectfully submitted that one of ordinary skill in the art would readily understand the scope and meaning of the phrase “flip-chip die.” In any event, this phrase has been replaced with the equivalent recitation of a semiconductor die with bond pads arranged in an array on an active surface thereof. It is respectfully submitted that this revision does not narrow the scope of claim 65.

Withdrawal of the 35 U.S.C. § 112, second paragraph, rejection of claim 65 is respectfully requested, as is the allowance of claim 65.

Rejections under 35 U.S.C. § 102

Claims 1, 2, 4-8, 12-16, 21-24, 26-31, 33-37, 39, 44, 47-49, 51-53, 55, 56, 64, 65, and 67-69 have been rejected under 35 U.S.C. § 102(b) for being drawn to subject matter that is allegedly anticipated by the subject matter described in U.S. Patent 5,411,400 to Subrahmanyam et al. (hereinafter “Subrahmanyam”).

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single reference which qualifies as prior art under 35 U.S.C. § 102. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Subrahmanyam describes an assembly in which first and second components are physically coupled and electrically connected to one another by inserts 12 that protrude from one of the components and sockets 14 that protrude from the other component. FIG. 1; col. 3, lines 2-4. the disclosure of Subrahmanyam is limited to inserts 12 and sockets 14 that are formed completely from conductive materials, such as metal. Col. 3, lines 50-52; col. 3, line 68, to col. 4, line 2.

As shown in FIGs. 6 and 9 of Subrahmanyam, each insert 12, 41 is a solid structure, including a cylindrical base 32 and a flanged circular head 37. *See also* col. 5, lines 40-41. FIGs. 7 and 9 of Subrahmanyam depict each socket 14, 42 as including a solid pedestal 29 upon which a sectioned ring 34 is disposed, with a flanged head 39 being located on an upper edge of the sectioned ring 34. *See also* col. 5, lines 56-57.

It is respectfully submitted that Subrahmanyam lacks any express or inherent description of a male member that includes both “a jacket” with “an aperture configured to be located over [a] corresponding contact pad” and “a conductive center substantially filling [the] aperture, as recited in independent claim 1. Instead, the insert 12, 41 of Subrahmanyam includes a solid cylindrical base 32 and a flanged circular head 37, neither of which could be considered to comprise a “jacket.”

In addition, it is respectfully submitted that Subrahmanyam includes no express or inherent description of a female member with “a jacket” and “a conductive center partially filling [an] aperture” of the jacket. Rather, the socket 14, 42 of Subrahmanyam includes a sectioned ring 34 that sits upon a pedestal 29 and that has no conductive material inside of it. *See, e.g.*, FIGs. 7 and 9.

Accordingly, it is respectfully submitted that, under 35 U.S.C. § 102(b), Subrahmanyam does not anticipate each and every element of independent claim 1.

Claims 2, 4-8, 12-16, and 21 are each allowable, among other reasons, for depending directly or indirectly from independent claim 1, which is allowable.

Claim 2 is further allowable because Subrahmanyam neither expressly nor inherently describes that the aperture of the socket 14, 42 described therein is “configured to partially limit insertion of [the insert 12, 41] thereinto.” To the contrary, FIGs. 7 and 9 depict the aperture of the socket 14, 42 as including smooth walls that are oriented perpendicular to the underlying pedestal 29.

Claim 5 is further allowable since Subrahmanyam includes no express or inherent description that the outer surface of the insert 12, 41 thereof “is configured to partially limit insertion” of the insert 12, 41 into the aperture of the socket 14, 42.

Claim 8 is additionally allowable because Subrahmanyam does not expressly or inherently describe a male member with a jacket having an end portion with a smaller periphery than a base portion of the jacket. Rather, the description of Subrahmanyam is limited to an insert 12, 41 with a circular head 37 that has a smaller periphery at its end than at a base of the circular head 37. Nonetheless, the outer periphery of the end of the circular head 37 appears to be the same size as the outer periphery of the base of the cylindrical base 32 of the insert 12, 41.

With respect to the semiconductor device component to which independent claim 22 is directed, it is respectfully submitted that Subrahmanyam lacks any express or inherent description of “a first member of a conductive structure . . . including a jacket having an aperture through a length thereof and a conductive center in [the] aperture . . .” Again, it is respectfully submitted that neither the insert 12, 41 of Subrahmanyam does not include any feature that could be considered to comprise a “jacket” and that the socket 14, 42 of Subrahmanyam does not include any conductive material within the aperture defined by its sectioned ring 34 and flanged head 39.

As such, under 35 U.S.C. § 102(b), the subject matter to which independent claim 22 is directed is allowable over the subject matter described in Subrahmanyam.

Each of claims 23, 24, 26-31, 33-37, 39, and 44 is allowable, among other reasons, for depending directly or indirectly from independent claim 22, which is allowable.

Claim 28 is additionally allowable since Subrahmanyam lacks any express or inherent description of a jacket that is configured to contain conductive material over at least one contact pad.

Claim 29 is further allowable because Subrahmanyam does not expressly or inherently describe a member of a conductive structure that includes a conductive center that substantially fills an aperture of a jacket.

Claim 31 is also allowable because Subrahmanyam does not expressly or inherently describe a male member with a jacket having an end portion with a smaller periphery than a base portion of the jacket. Rather, the description of Subrahmanyam is limited to an insert 12, 41 with a circular head 37 that has a smaller periphery at its end than at a base of the circular head 37. Nonetheless, the outer periphery of the end of the circular head 37 appears to be the same size as the outer periphery of the base of the cylindrical base 32 of the insert 12, 41.

Claim 35 is further allowable since Subrahmanyam does not expressly or inherently describe a member of a conductive structure that includes a conductive center that partially fills an aperture of a jacket.

Independent claim 47 is drawn to a semiconductor device assembly that includes a conductive structure with a first member and a second member. The first member includes a jacket with an aperture therethrough and a conductive center within the aperture. The second conductive member, which is configured to be interconnected with the first member, includes a jacket with an aperture therethrough and a conductive center within the aperture.

Again, it is respectfully submitted Subrahmanyam does not expressly or inherently describe each and every element of independent claim 47. In particular, neither the insert 12, 41 nor the socket 14, 42 of Subrahmanyam includes all of the feature of either the first member or the second member of the assembly to which independent claim 47 is directed. More particularly, it is respectfully submitted that the insert 12, 41 of Subrahmanyam lacks any feature that could be considered to comprise a “jacket,” while the socket 14, 42 of Subrahmanyam does not include “a conductive center” within an aperture defined by the sectioned ring 34 and flanged head 39 thereof.

Therefore, it is respectfully submitted that Subrahmanyam does not anticipate each and every element of independent claim 47, as would be required to maintain the 35 U.S.C. § 102(b) rejection of that claim.

Each of claims 48, 49, 51-53, 55, 56, 64, 65, and 67-69 is allowable, among other reasons, for depending directly or indirectly from independent claim 47, which is allowable.

Claim 49 is additionally allowable because Subrahmanyam includes no express or inherent description of a member of a conductive structure with an aperture that includes an upper portion with a smaller periphery than a base portion of the aperture. Instead, as shown in FIGs. 7 and 9, the upper portion of the periphery of the aperture of the socket 14, 42 is larger than the periphery of the base of the socket’s aperture.

Claim 52 is further allowable because Subrahmanyam neither expressly nor inherently describes that the aperture of the socket 14, 42 described therein is “configured to limit a distance the [insert 12, 41] is inserted into [the aperture].” To the contrary, FIGs. 7 and 9 depict the aperture of the socket 14, 42 as including smooth walls that are oriented perpendicular to the underlying pedestal 29.

Claim 53 is additionally allowable because Subrahmanyam does not expressly or inherently describe that the insert 12, 41 has an end portion with a smaller periphery than a base portion thereof. Rather, the description of Subrahmanyam is limited to an insert 12, 41 with a circular head 37 that has a smaller periphery at its end than at a base of the circular head 37. Nonetheless, the outer periphery of the end of the circular head 37 appears to be the same size as the outer periphery of the base of the cylindrical base 32 of the insert 12, 41.

Withdrawal of the 35 U.S.C. § 102(b) rejections of claims 1, 2, 4-8, 12-16, 21-24, 26-31, 33-37, 39, 44, 47-49, 51-53, 55, 56, 64, 65, and 67-69 is respectfully solicited, as is the allowance of each of these claims.

Rejections under 35 U.S.C. § 103(a)

Claims 10, 11, 17-20, 25, 40-43, 45, 46, 57-63, and 66 are rejected under 35 U.S.C. § 103(a).

The standard for establishing and maintaining a rejection under 35 U.S.C. § 103(a) is set forth in M.P.E.P. § 706.02(j), which provides:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Subrahmanyam in View of Abe

Claims 25 and 66 have been rejected under 35 U.S.C. § 103(a) for being directed to subject matter that is assertedly unpatentable over the teachings of Subrahmanyam, in view of teachings from U.S. Patent 5,646,442 to Abe et al. (hereinafter "Abe").

Claim 25 is allowable, among other reasons, for depending indirectly from independent claim 22, which is allowable.

Claim 66 is allowable, among other reasons, for depending indirectly from independent claim 47, which is allowable.

Subrahmanyam

Claims 10, 11, 17-20, 40-43, 45, 46, and 57-63 stand rejected under 35 U.S.C. § 103(a) for reciting subject matter which is purportedly unpatentable over the subject matter taught in Subrahmanyam.

Claims 10, 11, and 17-20 are each allowable, among other reasons, for depending directly or indirectly from independent claim 1, which is allowable.

Claim 10 is further allowable since Subrahmanyam includes no teaching or suggestion that either the insert 12, 41 or the socket 14, 42 thereof includes a jacket that comprises photopolymer. It is also submitted that, because the teachings of Subrahmanyam are limited to use of conductive materials to form the insert 12, 41 and the socket 14, 42, one of ordinary skill in the art wouldn't have been motivated to modify teachings from Subrahmanyam in such a way as to render the subject matter recited in claim 10 obvious.

Claim 11 depends from claim 10, and is also allowable since Subrahmanyam provides no teaching or suggestion of an insert 12, 41 or socket 14, 42 with a jacket that comprises a plurality of layers of photopolymer. Nor would one of ordinary skill in the art been motivated to modify the teachings of Subrahmanyam in such a way as to develop a structure with a jacket that includes a plurality of layers of photopolymer.

Claim 17 is additionally allowable because Subrahmanyam does not teach or suggest that either the insert 12, 41 or the socket 14, 42 thereof may include at least partially unconsolidated conductive material. Rather, the disclosure of Subrahmanyam is limited to conductive structures that comprise fully consolidated features.

Claim 18, which depends from claim 17, is further allowable because Subrahmanyam neither teaches nor suggests that either the insert 12, 41 or the socket 14, 42 thereof may include at least partially uncured conductive resin.

Claim 19, which depends from claim 18, is further allowable since Subrahmanyam does not teach or suggest that either the insert 12, 41 or the socket 14, 42 thereof may include uncured conductive resin.

Claim 20 is also allowable since Subrahmanyam includes no teaching or suggestion of an insert 12, 41 or a socket 14, 42 that includes thermoplastic conductive elastomer.

Each of claims 40-43, 45, and 46 is allowable, among other reasons, for depending directly or indirectly from independent claim 22, which is allowable.

Claim 40 is additionally allowable because Subrahmanyam does not teach or suggest that either the insert 12, 41 or the socket 14, 42 thereof may include at least partially unconsolidated conductive material. Rather, the disclosure of Subrahmanyam is limited to conductive structures that comprise fully consolidated features.

Claim 41, which depends from claim 40, is further allowable because Subrahmanyam neither teaches nor suggests that either the insert 12, 41 or the socket 14, 42 thereof may include at least partially uncured conductive resin.

Claim 42, which depends from claim 41, is further allowable since Subrahmanyam does not teach or suggest that either the insert 12, 41 or the socket 14, 42 thereof may include uncured conductive resin.

Claim 43 is also allowable since Subrahmanyam includes no teaching or suggestion of an insert 12, 41 or a socket 14, 42 that includes thermoplastic conductive elastomer.

Claim 45 is further allowable since Subrahmanyam includes no teaching or suggestion that either the insert 12, 41 or the socket 14, 42 thereof includes any feature that comprises a photopolymer. It is also submitted that, because the teachings of Subrahmanyam are limited to use of conductive materials to form the insert 12, 41 and the socket 14, 42, one of ordinary skill in the art wouldn't have been motivated to modify teachings from Subrahmanyam in such a way as to render the subject matter recited in claim 45 obvious.

Claim 46 depends from claim 45, and is also allowable since Subrahmanyam provides no teaching or suggestion of an insert 12, 41 or socket 14, 42 with any feature that comprises a plurality of layers of photopolymer. Nor would one of ordinary skill in the art been motivated to

modify the teachings of Subrahmanyam in such a way as to develop a feature that includes a plurality of layers of photopolymer.

Each of claims 57-63 is allowable, among other reasons, for depending directly or indirectly from independent claim 47, which is allowable.

Claim 57 is additionally allowable because Subrahmanyam does not teach or suggest that either the insert 12, 41 or the socket 14, 42 thereof may include at least partially unconsolidated conductive material. Rather, the disclosure of Subrahmanyam is limited to conductive structures that comprise fully consolidated features.

Claim 58, which depends from claim 57, is further allowable because Subrahmanyam neither teaches nor suggests that either the insert 12, 41 or the socket 14, 42 thereof may include at least partially uncured conductive resin.

Claim 59, which depends from claim 58, is further allowable since Subrahmanyam does not teach or suggest that either the insert 12, 41 or the socket 14, 42 thereof may include uncured conductive resin.

Claim 60 is also allowable since Subrahmanyam includes no teaching or suggestion of an insert 12, 41 or a socket 14, 42 that includes thermoplastic conductive elastomer.

Claim 62 is further allowable since Subrahmanyam includes no teaching or suggestion that either the insert 12, 41 or the socket 14, 42 thereof includes any feature that comprises a photopolymer. It is also submitted that, because the teachings of Subrahmanyam are limited to use of conductive materials to form the insert 12, 41 and the socket 14, 42, one of ordinary skill in the art wouldn't have been motivated to modify teachings from Subrahmanyam in such a way as to render the subject matter recited in claim 62 obvious.

Claim 63 depends from claim 62, and is also allowable since Subrahmanyam provides no teaching or suggestion of an insert 12, 41 or socket 14, 42 with any feature that comprises a plurality of layers of photopolymer. Nor would one of ordinary skill in the art been motivated to modify the teachings of Subrahmanyam in such a way as to develop a feature that includes a plurality of layers of photopolymer.

It is respectfully requested that the 35 U.S.C. § 103(a) rejections of claims 10, 11, 17-20, 40-43, 45, 46, and 57-63 be withdrawn, and that each of these claims be allowed.

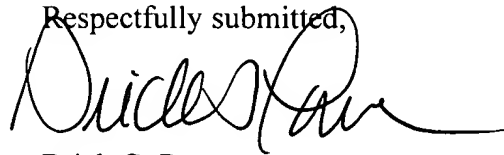
ELECTION OF SPECIES REQUIREMENT

It is respectfully submitted that each of claims 1, 2, 5, 8, 10-12, 14, 17-31, 35-37, 40-49, 52, 53, and 57-69 remains generic to all of the species of invention that were identified in the Election of Species Requirement in the above-referenced application. In view of the allowability of these claims, claims 3, 9, 32, 38, 50, and 54, which have been withdrawn from consideration, should also be considered and allowed. M.P.E.P. § 806.04(d).

CONCLUSION

It is respectfully submitted that each of claims 1-69 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,



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Attachment: Replacement Formal Drawings (7 sheets, 12 figures)

Document in ProLaw